IMPORTANCE OF MEASUREMENT AND EVALUATION IN TEACHING AND LEARNING

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INTRODUCTION

Evaluation is necessary for everybody. in every situation we evaluate ourselves how far we are successful in our life in every subject how for students are able to achieve their objective is evaluated. Before getting admission into a new course how for he/she is fit for taking admission, formative evaluation is conducted, measurement made what percentage of marks a student secure whether he/she is fit for study a new course or not. In every teaching learning situation measurement & Evaluation on is necessary by applying various techniques we evaluate classroom teaching. Among various techniques checklist is one among term. One can use observation schedule checklist, questionnaire to evaluate classroom teaching, after measurement and evaluation one can able to know how for classroom teaching is effective.

- **Meaning of Measurement**

Measurement means quantification of a thing, person achievement, in numerical term. Measurement means the extent and quality of anything being measured. Measurement is a matter of determining "how much, how little, how great, how small how much more than or how much less than

- **Definitions of Measurement**

James .M. Bradfield "Measurement is the process of assigning symbols to dimensions of phenomena in order to characterize the status of a phenomena in order as precisely as possible."

FROF. Richard H. Lindeman "measurement as the assignment of one of a set of numbers to each of a set of person or objects according to certain established rules.

N.E. Greenland and R.L. Linn "measurement is the process of obtaining a numerical description of the degree to which an individual process a particular characteristics."

Campbell "measurement means assignment of member to objects or events according to rules."

- **TYPES OF SCALES USED IN MEASUREMENT**

There are 4 types of scales used in measurement.
1. Nominal Scales
2. Ordinal Scales
3. Interval Scales
4. Ratio Scales

Nominal Scales:

It is used to classify objects. In it numbers or symbols are used to identify objects, person, group and its characteristics. This scale is used for job-classification, student classification, identification of things in a huge stock. Simple statistics are used with nominal data. Nominal scale is so primitive data some experts do not recognize it as measurement. Nominal level is sometime called as classification level and each class is represented by a letter, a name, a number or a geometrical design. Each number or symbols is like a category name, it has no quantitative significance.

Ordinal Scale:

In ordinal scale a set of objects is assigned a value on the basis of some rule. In this scale there is a quantitative difference from category to categories are arrange according to some order. In ordinal scale the objects or events are ranked from lowest to highest or from highest to lowest according to the characteristic we wish to measure.

Interval Scale:

When a measurement conveys meaningful information with respect to distance or scale, it is called equal interval scale. In interval scale the intervals are of known size characterized by units of measurement. In interval scales the intervals (i.e. the difference between two consecutive points on the scale) are

assumed to be equal over the scale interval scale have an arbitrary zero. Zero point is also found on the scale. Zero point is only arbitrary in behavioral science but is true in all physical measurement zero point here does not mean real absence of property being measured.

Ratio Scale

Ratio scale has a definite zero point. It is the highest level of measurement in ratio scale the ratio of any two scale points in independent of the units of measurement. In this scale the difference between 15 and 10 equal to the difference between 73 and 68 in this ratio scale a boy with a highest of 80cm is considered to be twice as tall as a boy with a height of 40cm we express so because in this scale there is an absolute zero-point reference. In physical sciences and in all physical measurement we use ratio scale. Measurement of physical dimensions such as highest, weight, distance, age, and years of experience is examples of ratio scale.

- **TYPES OF MEASUREMENT**

1. Physical measurement

There is an absolute zero point. It is related to fixed standard it has definite order. In has fixed measuring units to measure a trait. In it measurement is objective and absolute. Data are expressed in ratio scale.

2. Educational Measurement

There is no absolute zero point. It is related to some arbitrary standard. There is no fixed measuring units to measure a trait. Obtained data are converted to standard scores for interpretation. Educational measurement is subjective the data can be expressed in nominal ordinal or ratio scale.

Nature of Educational Measurement
1. In educational measurement there is no absolute zero point.
2. The units are not definite.
3. It conveys a sense of infinity.
4. It is a process of quantification.
5. It is a process of assigning symbols.
6. It cannot be measured directly.
7. It is a means to an and but not an end in itself.

- **Functions of Measurement**
1. Measurement helps in classification.
2. Measurement is used for selecting.
3. Measurement helps in comparison.
4. Measurement data helps in predicating future performance.
5. Measurement results are used for diagnosis.
6. Measurement helps in improving instructional practices.
7. Measurement helps in curriculum development.
8. Measurement results help in guidance and counseling.
9. Measurement helps in smooth administration and supervision.
10. Measurement helps in educational research.

- **Meaning and definition of teaching**

Teaching is the main activity through which schools discharge their duties and attain their objectives. Many efforts have been made to study teaching and improve it in order to make it realize pre-determined goals."
- According to **Jackson:** "Teaching is a face to face encounter between two or more person, one of whom (the teacher) intends to effect certain change in other participants (students)
- According to H.C **Morrison:** "teaching is an intimate contact between more matured personality and less matured one which is designed to further the education of the later."
- According to **Clarke:** "teaching refers to activities that are designed and performed to produce change in student (pupil) behavior."
- According to **Edmund Amidon:** "teaching is defined as an interactive process, primarily involving classroom talk which takes place between teaching and pupils and occurs during certain definable activities.
- According to **Joyce and Weil:** "teaching as a process by which teacher and students create a shared environment including sets of values and beliefs which in turn colour their view of reality."

• **Nature and Characteristics of Teaching**

1. The first characteristics of teaching is that teaching is a social activity which involves active participation of more than one human being (a teacher and a learner).Teaching must always involve and include the learner, without whom teaching is impossible.

2. The second characteristics of teaching are that teaching has a purpose and the purpose of teaching is to facilitate learning in teaching, something has to be learned.

3. Teaching is an art as well as science.

4. Teaching is a face to face encounter.

5. Teaching is prescription.

6. Teaching shapes behavior.

7. Teaching facilitates learning.

8. Teaching guidance

9. Teaching is an interactive process.

10. Teaching is a goal oriented process.

11. Teaching is a process of development

• **Definition of classroom teaching**

A class is a place where various activities are going on, where interactions take place between teacher and the learners. The classroom is an established organization in society. The instructional process that goes on in the classroom serves the purpose of cultivating learner's minds through significant practices accepted by the teacher.

Classroom teaching is a process that allows teacher to control the learning and direction of their classroom. In the classroom, teacher keeps student focused on learning while preventing disruption from slowing the learning process. Teaching effectiveness and attitude of teacher are mostly analyzed in the case of classroom teaching. In context of classroom teaching, the foundation on which a warm and murmuring relationship with learners can be built on the effect of the teacher. Teacher has a very significant, lifelong impact on their entire student.

• **Importance of classroom teaching**

1. Gesture and facial expressions:

The way a real-time teacher can teach, no one else can. The gesture, body language and facial expressions of an instructor influence a student's mind. It allows a child to connect to the teacher in the real time.

2. Promotes collaborative learning:

Basically, classroom environment is essential to promote and stimulate collaborative learning. Collaborative learning increases a student's self awareness about how other students learn and enables them to learn more easily and effectively, transforming them into keep learners inside and beyond classroom.

3. Improve social skills:

Inside a classroom student experience social interactions with peers and establish report with teacher. Helping children develop socially is an important aspect within the realm of their academic education.

4. Develops important personality and career building skills:

Classroom teaching inculcates conflict resolving skills, presentation skill when it comes to presenting their ideas confidently in front of peers, develops term spirit and teaches them to get along with those from different cultural background. Such experiences are valuable in shaping student's communication and listening skills, as well as growing and maturing emotionally.

5. Observation:

A teacher can observe the facial expressions of the students. He can interpret whether a child is having trouble understanding the concept.

6. Teaching style can be modified according to the students issues:

Teachers can modify their teaching style based on types of learners in their classroom. Classroom activities can help visual learner, interactions can help auditory learners etc.

• **Method use in data collection of classroom teaching process**

In teaching process we can use different types of method, these are given below –

    a.   Checklist Method

    b.   Rating Scale

    c.   Ranking Method

    d.   Graphic Rating Scales

From above these methods, I have chosen checklist method for preparing a project, because checklist, rating scale and observation schedule are in the syllabus for preparing this project. So I chose this method.

Meaning of checklist

A checklist is a list of statement that describe the characteristics and performance of student about specific behavior, knowledge and skills. This technique is used for evaluation.interest attitudes and values of the students. The ratings check to medicate if the behavior of a student is positive or negative to each statement. The performance of the student is rated on the basic of number of

positive check. A checklist is an instrument that is used to for collecting and recording evidence regarding significant behavior tendencies of the pupils or specific problems that are present in the class room.

• According to **N.E Gronlund and R.Linn**: "checklist is basically a method of recording whether a characteristics is present or absent or whether an action was or was not taken"

• **C.V. Good**: "checklist is a prepare list of items that may relate to a person, procedure, institution, building etc. used for purposes of observation and evaluation and on which one may show by check marks the presence, absence or frequency of occurrence of each stem on the list.

Principles of preparing a checklist

1. Each of the specific observable behavior desired in the performance must be identified.

2. Those actions that represent common errors should be added to the list.

3. The observable behaviors to be checked must be arranged in the approximate order to their occurrence.

4. A simple procedure for checking each action at the time of occurrence should be provided.

Used of checklist:

Like rating scale the check lists can be used for the purpose of:-

a. Procedure evaluation

b. Product evaluation

c. Personal social development evaluation

a. procedure evaluation:

In procedure evaluation a list of observable action of a particular task is given. The evaluator has to mark whether the performance is satisfactory or unsatisfactory.

b. product evaluation:

Checklist can be used for product evaluation in this case a list of characteristics of the finished product is given. The evaluator has to check whether each characteristic is present or absent while evaluating the product. However if the evaluator feels that the quality of the product can't be adequately described by merely absent or present in the case a rating scale should be used.

C. personal social development evaluation:

For a personal social development evaluation checklist can be convenient method of recording evidence of growth toward specific learning outcomes. Here the behaviors that have been identified as representative of the outcomes to be evaluated are enlisted. The evaluator has to make yes/no.

Types of checklist:

1. Simple checklist:

It includes certain statements of yes and no types. Simple checklist equal importance is given to each statement.

For example:

	Yes	No
Does the teacher regular come to school?	( )	( )
Does the student regular come to school?	( )	( )
Does the student come to school in their school uniform?	( )	( )
Is the teacher ask introductory question in the classroom?	( )	( )
Is the student give answer in the classroom?	( )	( )
Is the teacher teaching well in the classroom?	( )	( )
Is the teacher use the blackboard or not?	( )	( )
Is the teacher use TLM in the classroom that is Available in the school?	( )	( )
Does the student read properly?	( )	( )
Is the student take interest in study?	( )	( )
Does the teacher give daily homework?	( )	( )
Is the student give answer in the classroom?	( )	( )
Does the student use map in geography class?	( )	( )
Is the student have leadership quality?	( )	( )
Is the student follow the instructions of the Teacher?	( )	( )

2. Weighted checklist

Under it weight are assigned to different statement to medicate their importance. Equal importance is not given to each statement in it. For example:-

Traits/

Characteristics	Weight	Performance rating	Weights performance rating
Attendance	0.5		
Discipline	1.5		
English speaking	1.5		
Curriculum activities	2		
Leadership quality	2		
Cleanliness	1.5		
Punctuality	1		
Co-curricular activities	1.5		
Communication ability	1		
Interpersonal relation	1.5		

Advantages of checklist method:

- Easy to construct use.
- Align closely with tasks.
- Effective for self and peer assessment.
- Make learners aware of requirements, allowing them self- monitor progress.
- Useful for sharing information with parents and other stakeholders.
- Checklist, allow inter – individual comparisons.
- They are adaptable to subject matter areas.
- It is useful in evaluating learning activities.
- They are helpful in evaluating procedural work.
- It is good for site selection and priority setting.
- It requires little training.
- It allows us to be more effective at taking care of student.

Advantages of using checklist:

- Easy to use and update.
- Require little training.
- Available whenever evaluation is needed.
- Flexible and can be used with a variety of assessment strategies.
- Behaviors can be recorded frequently.
- It helps to keep objectives in mind
- It saves time during the audit.
- It structures and standardizes the audit approach.

Disadvantages of checklist method:

- Provided limited information about how to improve performance.
- Do not indicate relative quality of performance.
- Lake of detailed information because of close-ended question.
- It is time consuming method and costly to prepare.
- Checklist is difficult to assembly, analyze and weight several statements that properly describe the performance.
- Trained rates are required.
- It can be become a "rigid frame".

Disadvantages of using checklist:

- Can be time consuming.
- Teachers find it difficult to adapt teaching and evaluation behaviors to include checklists.
- Teachers may not consider assessment with checklist as valid measures.
- Checklist does not indicate how well a child performs.
- It can intimidate those who are audited.
- The items in a checklist can be out of scope.

Construction of objective based objective type test
Introduction:

The objective of evaluation is to provide clear, reliable and valid description about the pupil's achievement, classroom tests provide relevant information about pupils learning. Achievement test is an important tools in school evaluation and has great significant in measuring instructional progress and progress of the student in the subject area. Achievement means one's learning attainments, accomplishments, proficiencies, etc. it is directly related to the pupil's growth and development in educational situations. Tests should give an accurate picture of student's knowledge. And skill in the subject area or domain being tested. Accurate achievement data are very important for planning curriculum and instruction and for program evaluation. Test scores that overestimate

Construction of objective based objective type test on MIL (Odia) Subject of class VII
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Definitions:

According to **NM Dowrie** "any test that measures the attainments and accomplishments of an individual after a period of training or learning is called achievements."

According to **Thorndike and Itange** "An achievement' test is the type of ability test that describes what person has learnt to do."

According to **Grounlund** " An achievement test is a systematic procedure for determining the amount a student has learnt through instruction."

According to **H.W. Bernard,** "the concept of achievement involves the interaction of three factors such as (i) aptitude for learning (ii) readiness for learning and (iii) opportunity for learning."

C.V. Good defines achievements as the accomplishments or proficiency of performance in a given or proficiency of performance in a given skill or body of knowledge.

However, an achievement test is a test of developed skill or knowledge. The most common type of achievement test is a standardized test developed to measure skill and knowledge cleared in a given grade level, usually through planned instruction, such as training or classroom instruction. Achievements tests are designed to measure acquired knowledge or skills.

Characteristics of a good test:

Test preparation activities which promote quality, long term learning are appropriate content learning can reduce the likelihood that extraneous factors will influence students test area the various characteristics of a good test are:

- It can be tried out and selected on the basis of its difficulty level and discriminating power.
- Directly related to the educational objectives.
- It should process description of measure behavior in realistic and practical terms.
- Contains a sufficient number of test items for each measured behavior, concerned with important and usual matter, comprehensive, brief, precise and clear.
- It should be divided into different knowledge and skills according to behavior to be measured.
- Standardized the items and made instruction clear so that different users can utilize it.
- Rules and norms have to develop so that various age groups can use at various levels.
- It provides equivalent and incomparable forms of the test.
- A test manual has to be prepared, which can act as guide for administering and scoring.

Types of Achievement tests:

There are two types of achievement test
1. Standardized test
2. Teacher-made test

1. Standardized Test

A Standardized test is any form of test that (I) requires all takers to answer the same question or a selection of questions from common bank of question in the same way, and is scored in a standard or consistent manner. Which makes it possible to compare the relative performance of individual standardized testing in any examination that is administered and scored in a predetermined, standard manner? Standardized test are carefully constructed test which have uniformity of procedure in swing, administering and interpreting the test results.

2. Teacher-Made Test:

Teacher-Made Test are normally prepared and administered for testing classroom achievement of students, evaluating the method of teaching adopted by the teacher and other curricular programs of the school. Teacher made test is one of the most valuable instruments in the hands of the teachers to solve his purpose, it is designed to solve the problem or requirements of the teacher to solve his purpose. It is prepared to measure the outcomes and content of local

curriculum; it is very much flexible so that it can be adopted to any procedure and material. It does not require any sophisticated technique for preparation.

Types of Achievement test:
The different types of Achievement test are given in table

ACHIEVEMENT TEST			Oral Test
Objective Type Test		**Essay Type Test**	
Supply Type	Recognition Type	Expanded response type	Restricted Response Type
Question from/answer in one word/simple recall	Multiple choice		
Completion/fill in the blanks	Matching type		
	True false, yes/no Right/Wrong		

Step / Principles of construction of Teacher Made Test:
A teacher-made test close not requires a well planned preparation. Even than to make evaluation, careful consideration is needed to be given while constructing such test. The following steps may be followed for the preparation of teacher-made test:
1. Planning:
planning of a teacher-made test includes:
  a.   Determining the purpose and objective of the test.
  b.   Deciding the length of the test and portion the syllabus to be covered.
  c.   Preparing test specification.
      i.   Determining the weight age to different instructional objective.
      ii. Determining the weight age to different content areas.
      iii. Determining the items types to be included.
      iv. Preparation of the agree way table.

2. Preparation of the test:
Planning is the philosophical wrist and preparation is the practical aspects to be taken in to consideration while are constructs the tests. It is an art, a technique; one is to have it or to enquire it. It enquires much thinking, rethinking and reading before constructing test items. In this step the test items are constructed in accordance with the table of specification, along with instruction for the test and scoring key. Thus this step involves three important tasks.
  i.   Preparing test items.
  ii. Preparing instruction for the test.
  iii. Preparing the scoring key.

3. Try out of the test:
Once the test item is prepared, it is time to confirm the item worthiness validity, reliability, objectivity and usability of the test. Try out helps us to identify and ambiguous items, to determine difficult level of the items and to determine the discrimination power of the items. Try out involves two important function.
  i.   Administration of the test
  ii. Scoring of the test

4. Evaluation of the test:
Evaluation is the most important step in the process of test construction. It is necessary to determine the quality of the test and the quality of the response the evaluation process involves the following function:
  •   Items analysis
  •   Determining the validity of the test.
  •   Determining the reliability of the test.
  •   Determining the usability of the test.

Objectives type test:
Objective type test are highly structured test items. It requires the test to supply a word or symbol to select the correct answer from a number of alternatives. The answer of the items is fixed and specific one.

Gilbert Sam defines objective type test is "any test having clear and unambiguous scoring criteria."

William and Stephan defines objective type test as the "test that can be objectively scored

Objective type test items are different to measure different instructional objectives. Objectives type test are also called as new type test."

Merits of objective type test:
  1.   Objectives type test are more comprehensive it can over cover a wide angle of syllabus as it includes a large number of items.

  2.   It process objectivity of scoring.
  3.   The test are easy to score
  4.   Administration is easy.
  5.   It can be standardized. It requires less time in administration and scoring.
  6.   It can measure a wide range of instructional objectives.
  7.   It is highly reliable.
  8.   It allows for adequate content sampling.
  9.   It is more economic.

Need and importance of study :
In the modern content education means all round development of individual. In the process of evaluation of development of the child, quantitative assessment occupies. An important position a test is an effective tool to assess the learner's achievement quantitavely , which specify the degree of successfulness regarding the instructional objectives. There are varieties of test to measure the achievement of the learners. Essay type test are unable to cover the whole syllabus. It fails to assess the different cognitive domain of the learners. Objective based tests refer to the tests that are constructed taking into consideration all the instructional objectives. The tests are prepared to measure knowledge understanding and application skills of the learners.

Construction of objective based objective type test :
The test maker follows steps for the construction of the present teacher made test.
  1.   Planning the test
  2.   Preparing the test
  3.   Try out of the test
  4.   Evaluating the test

1. Planning the test
The first step in planning is to determine the objective of the test. The objective of the present teacher made test is to determine to prepare different types of objective type question based on knowledge, understanding and application. secondly the test maker has to prepare the test specification the test will measure a representative sample of the instructional objective and content area,

2. Preparing the test
After planning the test next important task is to prepare appropriate test items for the purpose following the rules and principles. Then the instruction of the test was prepared keeping in view of the time, way of answering and questing. A scoring key was prepared to obtain consistent data about the pupils performance.

3. Try out of the test
Once the test items are prepared, it is to confirm the item worthiness , reliability, validity, objectivity and usability of the test. Then the test has to be administered with proper physical and psychological environment such as sitting arrangement, proper light, and ventilation and mental state of the exapriress. Than the answer scripts are to be valued with the help of the scoring key which will provide a quantitative data for each people.

4. Evaluating the test
Evaluation is the most important step in the process of test construction. It is necessary to determine the quality of the test and the quality of the test and the quality of the response which following step:

Item analysis:
It is necessary to find out the appropriateness of item following the item analysis procedure, the following formula for computing item difficulty and item discriminating were followed,
$$\text{Item difficulty} = R/T*100$$
Where R = total number of student got the item correct.
        T = total number of student tried the item.
        Item discriminating = $Ru-R1/1/2T$

A high positive ratio indicates high discriminating power. For this purpose, an item analysis card should be prepared. So that it will be easier to find out the items to be discriminated. After the completion of the item analysis process the effective items list will be prepared. Then the items are to be arranged in order of difficulty keeping in view of the objective and content area. At last the reliability, validity and usability are to be calculated and final test booklet of questionnaire is ready as for the required number of items.